REMARKS

In the Response to the Final Rejection Office Action mailed July 31, 2007 Applicant has carefully reviewed the rejections and objections raised in the Office Action and herewith presents new claims that define the invention of the present application in more specific terms, particularly pointing out and distinctly claiming the novel and unobviousness of the present invention, and clearly distinguishing form the prior art cited and applied against the claims previously in the case.

More particularly, new claim 98 is set forth in detail in the following:

"Apparatus for controlling the temperature of a target animal at a given location comprising:

a. a sprayer including means for attaching to a fixed support for pivotal movement about a first axis and for mounting for pivotal movement about a second axis of different orientation from the first axis:

b. said sprayer comprising a motor driven fan having an axis of rotation, an air inlet, an air discharge and including fan blades, a hub, a guard grill, and a nozzle unit symmetrically mounted relative to the axis of rotation of the fan on one of the grill and hub on the discharge side of the fan without any substantial interference with the air discharge;

c. said nozzle unit including means for receiving liquid, at least one liquid inlet to the means for receiving liquid and at least one nozzle outlet directed downstream of the fan, and a removable elongated nozzle mounted in the nozzle outlet;

d. the sprayer being constructed and arranged to generate, at the air discharge of the fan, an air stream having a velocity of up to 20 m/sec, and to generate and propel, from the removable elongated nozzle, a mist stream of a beam-like quality centrally within the air stream that will be confined and maintained and entrained by the air stream, said mist stream having a measurable and controllable lateral dimension so that it can be accurately directed to a target animal, and being contained to a defined diameter of up to 7 meters for a target animal located a maximum distance of 16 meters from the fan

by introducing liquid under pressure of from about 2 atm to about 6 atm into the liquid inlet of nozzle unit at a rate of from about 5 l/hr to about 50 l/hr;

e. a control valve to control liquid admitted to the liquid inlet of the nozzle unit;

f. delivery means for delivering liquid under pressure via said control valve to the at least one liquid inlet of the nozzle unit;

g. sensing means for sensing a condition relative to a target animal location; and

h. control means responsive to said sensing means for controlling one of delivery of liquid to said at least one liquid inlet of the nozzle unit and the relative position of the sprayer with respect to a target animal location."

As is evident, new claim 98 of the present invention is drawn to a sprayer for generating a directional mist stream having a lateral dimension less than that of an air stream in which it is entrained with the mist stream directed to a given animal target so that the droplets of the mist impinge on the target animal and effect cooling. All claim language is taken from the specification, so there is no new matter issue.

The sprayer comprises a motor driven fan having an axis of rotation, an air inlet, an air discharge and includes fan blades, a hub, a guard grill, and a nozzle unit symmetrically mounted relative to the axis of rotation of the fan on one of the grill and hub on the discharge side of the fan without any substantial interference with the air discharge. The nozzle unit includes means for receiving liquid, at least one liquid inlet to the means for receiving liquid and at least one nozzle outlet directed downstream of the fan, and a removable elongated nozzle mounted in the nozzle outlet.

The sprayer is constructed and arranged to generate, at the air discharge of the fan, an air stream having a velocity of up to 20 m/sec, and to generate and propel, from the removable elongated nozzle, a mist stream of a beam-like quality centrally within the air stream that will be confined and maintained and entrained by the air stream. The mist stream has a measurable and controllable lateral dimension so that it can be accurately

directed to a target animal, and is contained to a defined diameter of up to 7 meters for a target animal located a maximum distance of 16 meters from the fan by introducing liquid under pressure of from about 2 atm to about 6 atm into the liquid inlet of nozzle unit at a rate of from about 5 l/hr to about 50 l/hr.

The apparatus further includes; i. a control valve to control liquid admitted to the liquid inlet of the nozzle unit; ii. delivery means for delivering liquid under pressure via said control valve to the at least one liquid inlet of the nozzle unit; iii. sensing means for sensing a condition relative to a target animal location; and iv. control means responsive to said sensing means for controlling one of delivery of liquid to said at least one liquid inlet of the nozzle unit and the relative position of the sprayer with respect to a target animal location. All of the above is necessary to achieve the intended result of cooling a target animal.

The apparatus and method of the present invention provides a synergism to achieve a directional mist stream having a lateral dimension less than that of an air stream in which it is entrained and one that will retain its integrity until it reaches its target animal. The mist stream generated by the apparatus and method of the present invention has a lateral dimension less than that of the air stream in which it is entrained, which insures that the mist droplets that are discharged from the nozzle unit and converge downstream to form the mist stream are prevented from being randomly dispersed due to the pressure and turbulence of the generated air stream that flows over the mist stream and confines the latter to a limited diameter. The mist stream therefore has a measurable and controllable lateral dimension so that it can be propelled directly to a desired target animal, such as a cow, to be cooled, while reducing water consumption.

Independent claim 108 of the present invention is drawn to a network of the sprayer claimed in claim 98; independent claim 118 is drawn to a method for directing a spray to a target location, and independent claim 128 is drawn to a method of spraying a plurality of locations using the method of claim 118.

In the Final Rejection the Examiner held that claims 1 and 36 were anticipated by Hull (1,586,997). Hull discloses a spraying apparatus which comprises a fan, a rotating hollow shaft through which insecticide is delivered, and radially arranged atomizing nozzles carried by the rotating shaft. The rapidly revolving fan draws the insecticide from the shaft and forces it outwardly with sufficient pressure to produce atomization of the insecticide. The atomization is further assisted by the rapidly rotating nozzles which produce air suction on the discharged insecticide, as the nozzles move through the air. A fog is produced and distributed over a widely spread area. There is no effort to generate a mist stream as defined and claimed.

The nozzles of Hull rotate as distinct from the stationary nozzle unit claimed. In Hull the fogger is certainly not fixedly mounted t on the downstream side of the fan symmetrical with the axis of rotation, as claimed. The spraying apparatus of Hull produces a fog of atomized liquid particles that is dispersed throughout the air stream, and not a mist stream having a lateral dimension less than that of an air stream in which it is entrained, as recited in claims of the present invention. To the contrary, Hull teaches in page 2, lines 76-78 that "***it is necessary that the fluid coming from the pipe 19 be under only a comparatively slight pressure,*** ", which, according to the present invention is insufficient to produce a mist stream of a desired lateral dimension at a predetermined distant location. Thus claims 98 to 137 are not anticipated or rendered obvious by Hull.

Roach et al (US 6,257,501) discloses an electric fan having a ring-shaped mister manifold. A mist stream having a measurable and controllable lateral dimension, as required by the present invention, cannot be generated since a cloud is formed whose shape is determined by the instantaneous wind current, and therefore, may vary from moment to moment.

Natschke (US 6,086,053) discloses a mister mounted on a fan guard, and through a plurality of water atomizing nozzles projects a mist into the fan airflow. Natschke does not generate a mist stream having a measurable lateral dimension which is less than

the lateral dimension of the air stream, as required by the present invention. As recited in column 2, lines 10-15 of Natschke, "the evenly spaced nozzles are directed away from the axis of the body...to disperse the misted water particles outwardly from the fan blade axis to evenly distribute water particles throughout the width of the airflow produced by the fan blades". The mist cannot be propelled directly to a desired object because the misted water particles discharged from the nozzle unit are dispersed and are not confined in any manner.

Terrell et al (US 6,578,828) also discloses a mist ring, and therefore a mist stream having a measurable and controllable lateral dimension cannot be generated (see for example Fig. 1).

Hostler et al (US 4,566,890) discloses a self purging fin cooler, which does not produce a mist stream.

New combination claims 98 to 137 are not anticipated or made obvious by being suggested or taught by Hull. The combination of Hull with any of the cited publications, such as Roach et al, Natschke, Terrell et al, or Hostler et al, will still not produce an apparatus or method that in any way anticipate or render obvious the claimed combinations of the present invention. None of the cited prior art publications recite the claimed operational characteristics or conditions of the present claimed invention to result in an effective cooling of one or a plurality of target animal(s).

In light of the foregoing remarks, this application should be in condition for allowance, and early passage of this case to issue is respectfully requested. If there are any questions regarding this amendment or the application in general, a telephone call to the undersigned would be appreciated since this should expedite the prosecution of the application for all concerned.

No fee is believed to be due for this submission. It is respectfully requested that, if necessary to effect a timely response, this paper be considered as a Petition for an

Extension of Time, time sufficient, to effect a timely response, and shortages in this or other fees, be charged, or any overpayment in fees be credited, to the Deposit Account of the undersigned, Account No. 500601 (Docket no. 7640-X04-019).

Respectfully submitted,

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